

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A photon number state generating apparatus comprising:

a photon pair source for generating a pair of photons consisting of a signal photon and an idler photon which are corrected in time of generation each other;

a photon number detector for detecting a number of the idler photons;

a gate device for controlling an emission of the signal photons;

a controller for controlling the gate device in response to a photon number information from the photon number detector,

a pulse height discriminator equipped in the controller for discriminating a photon number information having photon number within a specified range, wherein the controller controls the gate device in response to the photon number information from the photon number detector;

wherein said controller comprises:

a clock generator; and

a gate operation frequency judging section for controlling the gate device to be opened or closed for less than a specified number of times within a predetermined time defined by a clock signal of the clock generator.

Claim 2 (Original): The photon number state generating apparatus of claim 1, wherein said photon pair source comprises:

a pumping light source;

a nonlinear optical medium on which a pumping light from the pumping light source is incident.

Claim 3 (Original): The photon number state generating apparatus of claim 2 comprising:

a nonlinear optical crystal in which an angle between the pumping light and an optical axis of the nonlinear optical medium is set to an angle at which tuning curves come in contact with a straight line corresponding to a single specific wavelength a.

Claim 4 (Original): The photon number state generating apparatus of claim 2 comprising:

a nonlinear optical crystal in which an angle between the pumping light and an optical axis of the nonlinear optical medium is set to an angle at which tuning curves come in contact with two straight lines corresponding to two specific wavelength a and b.

Claim 5 (Original): The photon number state generating apparatus of claim 2, wherein said nonlinear optical medium on which the pumping light is incident comprises a waveguide channel type nonlinear optical medium.

Claim 6 (Original): The photon number state generating apparatus of claim 2, wherein the nonlinear optical medium on which the pumping light is incident comprises a pseudophase matching type nonlinear optical medium.

Claims 7-13 (Canceled).

Claim 14 (Original): The photon number state generating apparatus of claim 1 further comprising:

an optical fiber for allowing the idler photon to reach the gate device for controlling an emission of the photon.

Claim 15 (New): The photon number state generating apparatus of claim 1, further comprising:

a waveguide channel filter positioned between the photon pair source and photon number generator configured to polarizingly beam split the pair of photons.

Claim 16 (New): The photon state generating apparatus of claim 1, wherein the photon number detector comprises plural photon detector elements.

Claim 17 (New): The photon number state generating apparatus of claim 1, wherein the gate device comprises two shutters.